

WHAT IS CLAIMED IS:

1. A system for controlling a dual-speed motor comprising:
a direct current (DC) power supply;
a dual-speed DC motor;
a first solid-state switch electrically coupled to said DC power supply and a low-speed input of said dual-speed DC motor;
a second solid-state switch electrically coupled to said DC power supply and a high-speed input of said dual-speed DC motor; and
a third solid-state switch electrically coupled between said first solid-state switch and said low-speed input of said dual-speed DC motor, wherein a first side of said third solid-state switch is coupled to a power supply side of said system and a second side of said third solid-state switch is coupled to a load side of said system.
2. The system of claim 1, wherein said first and second solid-state switches comprise intelligent solid-state switches.
3. The system of claim 1, wherein said third solid-state switch comprises one of a power metal oxide semiconductor field effect transistor (MOSFET) or an insulated gate bipolar transistor (IGBT).
4. The system of claim 1, wherein said DC power supply comprises a 14 volt battery.
5. The system of claim 1, further comprising:
a microcontroller including a low-speed control channel and a high-speed control channel electrically coupled to said first, second, and third solid-state switches;
wherein said high-speed control channel is electrically coupled to said second solid-state switch; and

wherein said low-speed control channel is electrically coupled to said first solid-state switch and said third solid-state switch.

6. The system of claim 5, further comprising:

a first transistor electrically coupled between said low-speed control channel and said first solid-state switch; and

a second transistor electrically coupled between said high-speed control channel and said second solid-state switch.

7. The system of claim 6, wherein said first and second transistors comprise bipolar junction transistors (BJT).

8. The system of claim 6, further comprising a third transistor electrically coupled between said low-speed control channel and said third solid-state switch.

9. The system of claim 6, further comprising a gate driver electrically coupled between said low-speed control channel and said third solid-state switch.

10. A system for eliminating a sneak path in a circuit comprising:

a power supply;

a potential sneak path disposed in said circuit; and

a solid-state switch electrically coupled in said potential sneak path, wherein a first side of said solid-state switch is coupled to a power supply side of said circuit and a second side of said solid-state switch is coupled to a load side of said circuit.

11. The system of claim 10, wherein said solid-state switch comprises one of a power metal oxide semiconductor field effect transistor (MOSFET) or an insulated gate bipolar transistor (IGBT).

12. The system of claim 10, further comprising:

a microcontroller electrically coupled to said solid-state switch;

wherein said microcontroller controllably activates said solid-state switch.

13. The system of claim 12, further comprising a gate driver electrically disposed between said microcontroller and said solid-state switch, wherein said gate driver is configured to supply an activation voltage to said solid-state switch.

14. The system of claim 10, wherein said solid-state switch is disposed between a low-speed terminal of a dual-speed motor and a low-speed switch.

15. A system for controlling a dual-speed motor comprising:

a means for supplying power;

a dual-speed DC motor;

a first means for switching electrically coupled to said power supplying means and a low-speed input of said dual-speed DC motor;

a second means for switching electrically coupled to said power supplying means and a high-speed input of said dual-speed DC motor; and

a third means for switching electrically coupled between said first switching means and said low-speed input of said dual-speed DC motor, wherein a first side of said third switching means is coupled to a power supply side of said system and a second side of said third switching means is coupled to a load side of said system.

16. The system of claim 15, wherein said third switching means comprises a solid-state switch.

17. The system of claim 15, further comprising:

a means for controlling said first, second, and third switching means;

wherein said controlling means is configured to selectively activate said first, second, and third switching means.

18. A method for providing a dual-speed direct current (DC) motor having reduced sneak path comprising:

providing a dual-speed DC motor and a DC power supply, wherein said dual-speed DC motor and said DC power supply are electrically coupled;

providing a first solid-state switch coupled between said DC power supply and a high-speed terminal of said dual-speed DC motor;

providing a second solid-state switch coupled between said DC power supply and a low-speed terminal of said dual-speed DC motor;

providing a third solid-state switch coupled between said second solid-state switch and said low-speed terminal of said dual-speed DC motor; and

arranging said third solid-state switch coupled between said second solid-state switch and said low-speed terminal of said dual-speed DC motor such that said third solid-state switch prevents a sneak current from passing to said second solid-state switch.

19. The method of claim 18, wherein said step of arranging said third solid-state switch comprises:

electrically coupling a first side of said third solid-state switch to said second solid-state switch; and

electrically coupling a second side of said third solid-state switch to said low-speed terminal of said dual-speed DC motor.

20. The method of claim 19, wherein said first and second solid-state switches comprise intelligent solid-state switches.

21. The method of claim 19, wherein said third solid-state switch comprises one of a power metal oxide semiconductor field effect transistor (MOSFET) or an insulated gate bipolar transistor (IGBT).

22. The method of claim 19, further comprising:

providing a microcontroller including a low-speed control channel and a high-speed control channel electrically coupled to said first, second, and third solid-state switches;

wherein said high-speed control channel is electrically coupled to said second solid-state switch; and

wherein said low-speed control channel is electrically coupled to said first solid-state switch and said third solid-state switch.

23. The method of claim 22, further comprising:

electrically coupling a first transistor between said low-speed control channel and said first solid-state switch; and

electrically coupling a second transistor between said high-speed control channel and said second solid-state switch.

24. The method of claim 23, wherein said first and second transistors comprise bipolar junction transistors (BJT).

25. The method of claim 23, further comprising electrically coupling a third transistor between said low-speed control channel and said third solid-state switch.

26. The method of claim 23, further comprising electrically coupling a gate driver between said low-speed control channel and said third solid-state switch.